

Advancing Atmospheric Science Using GNSS Radio Occultation: Recent Progress And Future Outlook

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GNSS radio occultations (RO) possess properties that are unique and complementary to passive infrared and microwave satellite observations. High vertical resolution and the ability to penetrate clouds and precipitation help delineate the vertical structures of the atmosphere associated with the tropopause, planetary boundary layer (PBL), convective cloud tops, as well as gravity and planetary waves. With over 15 years of global RO measurements from multiple satellite missions including CHAMP and COSMIC/FORMOSAT-3, we can begin to utilize these data to study climate variability and change in the atmosphere and assess climate models. In this talk, I will highlight key science results from recent studies. In addition, I will discuss the outlook in the near future for GNSS-RO, including the improved PBL observations that will become available from the next-generation GNSS-RO instruments on COSMIC-2, and other innovative concepts.